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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,842

09/13/2006

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EXAMINER

KRYLOVA, IRINA

ART UNIT

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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,842	Applicant(s) MASAKI, KOJI	
	Examiner Irina Krylova	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Objections to claims 2,3,10,13,14 are withdrawn in light of applicant's amendment filed on 03/24/2009.

2. All rejections are withdrawn in light of Applicant's amendment filed on 03/24/2009.

The new grounds of rejection set forth below are necessitated by Applicant's amendment filed on 03/24/2009. In particular, claim 1 was amended to include a limitation of the copolymer (B) having a weight average molecular weight of more than 50,000 but not more than 300,000. Thus, this limitation was not previously presented and was taken from the instant specification (see paragraph [0024] of the instant specification). Therefore, the following action is properly made final.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakagawa et al** in JP 2003253051 (rejection is based on a machine English translation).

4. As to instant claims 1-3, 5-6, 8-9, **Nakagawa et al** discloses a rubber composition for tires comprising:

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A) 100 part by mass of a styrene-butadiene copolymer having a weight – average molecular weight of 400,000 to 3,000,000, as obtained by gel permeation chromatography and expressed as the value of corresponding polystyrene, having the content of bound styrene 20-70% by mass, a content of a vinyl unit in the butadiene portion 10-50% (Abstract, [0008]);

B) 10-200 parts by mass of styrene - butadiene copolymer having a weight – average molecular weight of 5,000 to 200,000, as obtained by gel permeation chromatography and expressed as the value of corresponding polystyrene, having the content of bound styrene 25-70% by mass and a fraction of hydrogenated double bond in the butadiene portion of 60% or greater (Abstract, [0008]);

C) 10-150 parts by mass per 100 parts by mass of A) and B), of styrene-butadiene, butadiene, or isoprene rubber ([0024]), wherein the difference between styrene content between copolymer B) and copolymer A) is equal or more than 10% ([0008], [0012]).

5. As to instant claims 4 and 7, the copolymers A) and B) are obtained by solution polymerization ([0013], [0014]).

6. As to instant claim 10, the composition comprises 10-250 parts by mass of a filler per 100 parts of the rubber component ([0031]).

As to instant claims 11-12, the filler comprises carbon black HAF or SAF class ([0028]).

.As to instant claim 15, the rubber composition is used to make tire treads (Claim 19).

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7. Though **Nakagawa et al** does not explicitly state the vinyl bond content in a butadiene portion of the styrene-butadiene copolymer (B), nevertheless, since **Nakagawa et al** recite that the fraction of hydrogenated double bond in the butadiene portion is 60% or greater, therefore, it would have been obvious to a one skilled in the art at the time of the invention was made that the content of non-hydrogenated double bond (vinyl bond) will be 40% or less, which overlaps with the range of the vinyl bond content claimed in the instant invention.

8. Claims 1-2, 5-9, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujimaki et al** in US 4,866,131.

9. As to instant claim 1, **Fujimaki et al** discloses a rubber composition for tire treads comprising:

A) 10-60%wt of aromatic vinyl compound - diene copolymer;

B) diene-based rubber,

wherein the copolymer has molecular weight of 2,000-50,000 (as to instant claims 8-9); aromatic vinyl compound comprises styrene (as to instant claim 5), diene comprises butadiene (as to instant claim 6) (Abstract, col. 2, lines 22-26; Table 1). The copolymer comprises 20-70% of styrene and vinylic butadiene units comprise 39-70% (Table 1). As to instant claim 2, rubber comprises styrene-butadiene rubber (col. 3, lines 12-20).

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As to instant claim 7, the copolymer is prepared by solution polymerization (col. 2, lines 48-50). The composition comprises carbon black of HAF class (Table 2).

As to instant claims 13-14, the composition contains 37.5 parts by weight of an aromatic oil per 100 parts by weight of styrene-butadiene copolymer (col. 4, lines 50-55). As to instant claim 15, the composition is used to make high performance tire treads (col. 6, lines 1-5).

10. Although the molecular weight of the aromatic vinyl compound - diene copolymer of **Fujimaki et al** (50,000) is not overlapping with the molecular weight of the aromatic vinyl compound-diene compound copolymer claimed in the instant invention (more than 50,000), it is the examiner's position that the values are close enough that one of ordinary skill in the art would have expected the same properties. Case law holds that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

11. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujimaki et al** (US 4,866,131), as applied to claim 1 above, and further in view of **Muraki et al** (US 5,500,482).

12. Fujimaki et al discloses a rubber composition for tire treads comprising:

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A) 10-60%wt of aromatic vinyl compound - diene copolymer;

B) diene-based rubber,

wherein the copolymer has molecular weight of 2,000-50,000, aromatic vinyl compound comprises styrene, diene comprises butadiene (Abstract, col. 2, lines 22-26; Table 1).

The copolymer comprises 20-70% of styrene and vinylic butadiene units comprise 39-70% (Table 1).

13. Fujimaki et al teaches adding a filler (see col. 3, lines 55-58) but fails to disclose the addition of 30-90 parts by weight of filler based on 100 parts of rubber component.

14. As to instant claims 10-11, **Muraki et al** discloses a rubber composition for a tire tread comprising :

1) 100 parts by weight of rubber component comprising :

a) natural rubber;

b) 20-60% by weight of styrene-butadiene copolymer having vinyl content in the

butadiene portion 35-80% by weight and a styrene content of 10-40% by weight;

2) 20-70 parts by weight of carbon black (Abstract). As to instant claim 12, carbon black is HAF class (col. 7, lines 25-30).

15. Since **Muraki et al** discloses a rubber composition comprising styrene-butadiene copolymer and a rubber, similar to composition of **Fujimaki et al**, but specifies addition of carbon black filler to improve wet slid resistance of the tire, therefore, it would have

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been obvious to one skilled in the art at the time of the invention was made to include carbon black filler into composition of **Muraki et al**, similar to **Fujimaki et al**, to improve wet skid resistance and wear resistance of the tire tread (see col. 2, lines 12-21 in **Muraki et al**).

Response to Arguments

16. Applicant's arguments filed on 03/24/2009 have been fully considered but they are not persuasive.

17. As to a rejection under 35 U.S.C. 102 over **Nakagawa et al**, the Applicant argues that **Nakagawa et al** fails to disclose a vinyl bond content in a butadiene portion of the styrene-butadiene copolymer (B). Examiner disagrees. Though **Nakagawa et al** does not explicitly state the vinyl bond content in a butadiene portion of the styrene-butadiene copolymer (B), nevertheless, since **Nakagawa et al** recite that the fraction of hydrogenated double bond in the butadiene portion being 60% or greater, therefore, it would have been obvious to a one skilled in the art at the time of the invention was made that the content of non-hydrogenated double bond (vinyl bond) will be 40% or less, which overlaps with the range of the vinyl bond content claimed in the instant invention. The new rejection under 35 U.S.C. 103 over **Nakagawa et al** is set forth in paragraphs above.

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18. As to a rejection under 35 U.S.C. 102 over **Fujimaki et al**, the Applicant has amended the claims to further limit the range for the molecular weight of the copolymer (B) to the range of 20,000-50,000, and argues that this range is not disclosed by **Fujimaki et al**. Examiner disagrees.

19. These molecular weight values are close enough that one of ordinary skill in the art would have expected the same properties. Therefore, the amended claims are now rejected under 35 U.S.C. 103 over **Fujimaki et al**.

20. Applicant also argues that **Fujimaki et al** discloses the following: "if the molecular weight of the copolymer is above 50,000, the resultant rubber composition does not sufficiently augment in the hysteresis loss value" and teaches away from the present invention. Examiner disagrees. **Fujimaki et al** discloses a rubber composition comprising an aromatic vinyl-diene copolymer having molecular weight of 2,000-50,000, wherein the composition comprises large hysteresis loss value (col. 1, lines 42-45). This correlates to the high loss factor values of the copolymer (B) having molecular weight 4,000; 25,000 and 40,000, given in Table 2 of the instant specification. Then **Fujimaki et al** states that if the molecular weight of the copolymer increases, the rubber composition does not augment (i.e. does not increase) in the hysteresis loss value. Therefore, **Fujimaki et al** discloses the trend of the results given in Table 2 of the instant invention because as the molecular weight of the copolymer (B) increases, the loss factor value decreases.

21. In addition, the Applicant filed a declaration 37 C.F.R. 1.132, which has been fully considered but found not persuasive because of the following reasons:

The object of instant invention was to “provide a rubber composition having high storage modulus and a low loss factor without damaging workability” (see [0004] of the instant specification).

22. In the provided Declaration Applicant is trying to:

- a) compare Mooney viscosity index (as characteristic of processability), Storage modulus and Loss factor for the styrene-butadiene copolymer (B) having molecular weight less than 50,000 and 51,000 and more, in order to
- b) prove that rubber composition comprising a copolymer (B) having a molecular weight of more than 50,000-300,000 can: a) improve storage modulus, b) decrease loss factor;
- c) improve the processability (i.e. can lower the Mooney viscosity).

23. However, examiner's analysis of the Declaration indicates that it is not persuasive for the reasons given below.

1) As to comparing **processability** of the styrene-butadiene copolymer (B) having molecular weight of 40,000 and 51,000 and higher, it is evident from the Table 2 that the Mooney viscosity at least slightly increases (not decreases) (ML 1+4 is 90 at MW 40,000, ML1+4 is 92 at MW 51,000 and ML1+4 is 94 at MW 63,000) with the increase of the molecular weight, which leads to lowering of the processability. Therefore, the

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trend of lowering of processability with increase of molecular weight and, therefore, with increase Mooney viscosity of a polymer, is an expected result.

2) As to comparing **Storage modulus** of the styrene-butadiene copolymer (B) having molecular weight of 40,000 and 51,000 and higher, it is evident from the Table 2 that the Storage modulus only slightly (1.7%) increases with increase of the molecular weight of the copolymer (B) ($G' = 113$ at 40,000; $G' = 115$ at 51,000; $G' = 117$ at 63,000 and $G' = 118$ at 80,000). This increase is so low that it may be caused by an error in measurement procedure. The trend in changing of Storage modulus values is not shown to be unexpected.

3) As to comparing **Loss factor** of the styrene-butadiene copolymer (B) having molecular weight of 40,000 and 51,000 and higher, it is evident from the Table 2 that the Loss factor decreases with the increase of the molecular weight.

However, it is known in the art that: in polymers of the same composition (including polymers of butadiene) $\tan \delta$ at 60°C decreases with increasing polymer molecular weight. Therefore, the lowering of the loss value of the copolymer (B) with the increase of the molecular weight of the copolymer (B) is an expected result.

Therefore, the declaration fails to show unexpected or surprising results such as would overcome the rejections of record.

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24. In addition, claim 1 of the instant invention broadly claims a composition comprising an aromatic vinyl compound-diene compound copolymer (B), whereas the filed Declaration shows the experimental results for only one specific styrene-butadiene copolymer. Therefore, the data in the declaration is not commensurate in scope with the scope of the instant claims.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Obvious double patenting rejection I.

25. Claims 1-16 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application

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No.11/908,462 (published US 2009/0054549). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

26. The copending application 11/908,462 ('462) claims a rubber composition comprising 5-60 pbw of a LMW aromatic vinyl compound-conjugated diene compound copolymer (B) having aromatic vinyl compound content of 5-80%mass, a vinyl bond content in the diene portion of 10-80%mass and a weight average molecular weight of 5,000-200,000 and a filler based on 100 pbw of a rubber (A) composed of at least one of a natural rubber and synthetic diene-based rubbers. The composition is used for making tires.

Therefore, the rubber composition claimed in the instant invention is the same as rubber composition claimed in the copending application '462.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

27. Claims 1-16 are directed to an invention not patentably distinct from claims 1-9 of copending Application No.11/908,462 (published US 2009/0054549).

Specifically, see the discussion in paragraphs 25-26 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). The copending Application No.11/908,462 , discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Obvious double patenting rejection II.

28. Claims 1-16 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14, 20 of copending Application No.11/817,573 (published US 2008/0289740). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

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29. The copending application 11/817,573 ('573) claims a rubber composition comprising 2-60 pbw of a LMW aromatic vinyl compound-conjugated diene compound copolymer (B) having aromatic vinyl compound content of 5-80%mass, a vinyl bond content in the diene portion of 5-80%mass and a weight average molecular weight of 5,000-500,000 and at least one functional group, based on 100 pbw of a rubber (A) composed of at least one of a natural rubber and synthetic diene-based rubbers. The composition is used for making tires.

30. Therefore, the rubber composition claimed in the instant invention and the rubber composition claimed in the copending application '573 are obvious variants of each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

31. Claims 1-16 are directed to an invention not patentably distinct from claims 1-14, 20 of copending Application No.11/817,573 (published US 2008/0289740). Specifically, see the discussion in paragraphs 28-30 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). The copending Application No.11/817,573, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the

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commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina Krylova whose telephone number is (571)270-7349. The examiner can normally be reached on Monday-Friday 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/I. K./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796

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